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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,856	02/08/2002	Takafumi Sakamoto	0171-0817P	9661

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EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 04/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/067,856

Applicant(s)

SAKAMOTO ET AL.

Examiner

Marc S. Zimmer

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwahara et al., U.S. Patent # 4,904,732 in view of Kimura et al., U.S. Patent # 5,319,050. Iwahara teaches an isobutylene (co)polymer having a molecular weight between 500 and 30,000 that bears preferably between 1.2 and 4 crosslinkable silicon-based functional groups (column 5, lines 21-23) per molecule, and compositions containing the same. Of the crosslinkable groups mentioned therein (column 4, lines 37-68 through column 5, lines 1-16), hydrolyzable silyl groups adhering to the formula  $-\text{Si}(\text{R}^1)_{3-a}\text{X}_a$  are most favored. The polymers are generally prepared by a cationic polymerization technique but the specialized Inifiter technique is especially preferred. Where the initiating species is the halogenated aromatic compound exhibited at column 2, lines 50-55, the polyisobutylene compound satisfies all of the structural limitations of both claims 1 and 2. In columns 9-14 of the reference, compositions containing this compound are contemplated. Among the materials that may be combined with the curable polymer are polysiloxane modifiers, fillers, condensation catalysts and plasticizers including hydrocarbon plasticizers such as those outlined in column 13, lines 67-68 through column 14, lines 1-5. Significantly the compositions disclosed by Iwahara are stated to be useful in a number of applications including ones where rapid

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and complete deep curing is essential e.g. sealants, and molded materials (column 14, lines 47-51). However, there is no mention of the inclusion an amine compound and a carbonyl group-containing compound as a means of providing equivalents of water well below the surface of the composition.

Kimura teaches condensation curable compositions exhibiting a good "depth curing property" (column 1, lines 51-52) wherein a polymer terminated at each end with a hydrolyzable silyl group is mixed with a carbonyl group-containing compound and an amine compound. Each of the latter two compounds is made available in a sufficient quantity to provide up to 1 mol of amine- and carbonyl moieties per 100 parts of the polymer. Moreover, said amine and carbonyl-containing compounds are selected so as to be reactive towards one another. According to column 2, lines 13-29, it is these materials that are credited with supplying the water necessary for deep curing by reacting with each other to form an imine and simultaneously splitting off an equivalent of H<sub>2</sub>O. Kimura does not, on the other hand, disclose polymers derived from olefin monomer hence there is no anticipation of the instant invention.

Nonetheless, it is significant that the polymers disclosed by Iwahara and Kimura are cured by *precisely the same* mechanism. Accordingly, the curable isobutylene polymer will inherently suffer from the same deep-curing problems associated with the polysiloxanes and polyethers described by Kimura. In this connection, it would have been obvious to one having ordinary skill to add a carbonyl compound and an amine to the composition disclosed by the primary reference to facilitate more thorough and rapid curing at depths substantially below the surface. Indeed, one of ordinary skill will

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appreciate that this approach for enhancing the curing properties of condensation-curable polymers is general and may be employed to crosslink any of a host of hydrolyzable silyl group-functionalized polymers irrespective of how the polymer backbone is constituted.

U.S. Patent # 5,424,383 to Kimura et al., U.S. Patent # 5,705,591 to Matsuda et al., and U.S. Patent # 6,306,998 to Kimura et al. are cited as further illustration that it is widely known to use combinations of amine compounds and carbonyl compounds in concert with condensation-curable polymers to improve curing in portions of the matrix well below the surface of the material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

March 31, 2003



Robert Dawson  
Solicitor Patent Examiner  
Technology Center 1700